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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/676,973	09/30/2003	Ikuo Nakano	49814 DIV (70904)	7679

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EXAMINER	
HARRINGTON, ALICIA M	

ART UNIT	PAPER NUMBER
2873	

DATE MAILED: 03/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/676,973	NAKANO ET AL.	
	Examiner	Art Unit	
	Alicia M Harrington	2873	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 September 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *10-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *10-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 September 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *0903*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The Examiner has considered the information disclosure statement filed on 9/30/03.

Drawings

2. Figure s 17-18 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

3. The abstract of the disclosure is objected to because the abstract exceeds 150 words. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 12 and 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 12, Applicant defines dis (1) and dis (N) being the lens group gap for the first and Nth recording layer. However, applicant has not clearly defined dst (3). The examiner is unclear as to what the relationship of dst (3) represents when adding the lens gaps of the first and Nth layer/2 in theory or practice to the optical recording structure, and thus renders the claim indefinite.

A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 13 recites the broad recitation Nth recording layer, and the claim also recites "one recording layer" which is the narrower statement of the range/limitation.

Claim 13 will be examined as best understood by the Examiner.

Claim 12 will not be treated on the merits.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 10, 11, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mc Donald et al (US 6,071,549).

Regarding claims 10, McDonald discloses an optical recording/reproduction apparatus (for example figure 1), which records/reproduces information on/from a recording medium having recording layers the number of which is represented by N (see figure 1; 22A-22C;col 3, lines 1-11), where N > 2, by converging light rays from a light source (inherent; see figure 1 for example) thereon, comprising:

an objective lens (20-lens pair) for converging light rays from the light source onto the recording medium (1); and a spherical-aberration correcting mechanism (30A) for correcting spherical aberration of converged light spots formed on the recording layers (see col. 5, lines 30-45), wherein, the objective lens is set so that a converged light spot, derived from light rays transmitted through a light transmitting body having an optical thickness of p4 (25;col. 3,lines 5-10) and converged, the N recording layers comprise a first recording layer, ..., an Nth recording layer in succession from the objective lens side, and an optical thickness at a mid-point between the first recording layer and the Nth recording layer is represented by t4, p4 and t4 are coincident with each other and a converged light spot formed at the mid-point between the first recording layer and the Nth recording layer by the objective lens . Mc Donald discloses the air gap is adjusted between the lens pair as a method for minimizing spherical aberration. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made that the midpoint (position in the layers) has a minimum spherical aberration when light rays emitted from the spherical-aberration correcting mechanism have a minimum spherical aberration, since

Donald teaches that adjusting the gap between the lenses compensates for aberration due to storage medium thickness and focus depths.

It is also well known in the art, that spherical aberration produced by variation in multi-layer optical disks are influenced by the type of disk (CD or DVD), thickness of the optical cover layer and refractive index of the layers, as well as beam alignment, phase of beam and numerical aperture of the objective lens –official notice is taken to this fact. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify, to create a optical correcting element with minimum spherical aberration as not to increase the aberration in the system and provide coverage for a range of layer depths, starting with aberration that would be produced by an optical disc with a standard system minimum layer depth (for example CD verses DVD). . Thus, it would also have been obvious to one of ordinary skill in the art at the time the invention was made to modify Mc Donald, such that the position of light in the layers (midpoint) have a minimum aberration when the aberration correction element has minimum aberration.

Regarding claims 11 and 13, McDonald discloses adjusting the lens air gap controls the spherical aberration. McDonald also teaches the adjustments occur as a result of a change of the lens focus depth in the layers (see col. 2,lines 32-46). The Examiner takes official notice that depth of focus, aperture and refractive index all influence spherical aberration. Thus, the spherical aberration occurring at the first layer is proportionality the same as that which occurs at the Nth layer because the lens pair operates to adjust the for the focal depth and the refractive index of the layers are almost equal to one another (col. 5,lines 1-27). Thus, it would have been obvious to

one of ordinary skill in the art at the time the invention was made that materials of similar refractive index (similar density) would not substantially increase the aberration in the Nth layer.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ueda et al (US 6,418,108) discloses an optical heads, recording and /or reproducing method and apparatus and method for detecting thickness;

Hendrik (US 6,567,365) discloses an optical scanning device;

Takahashi (US 6,108,139) discloses an optical head device and method of information reproduction using the same; and

Reno (US 5,157,555) discloses an apparatus for adjustable correction of spherical aberration.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alicia M Harrington whose telephone number is 571 272 2330. The examiner can normally be reached on Monday - Thursday 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on 571 272 2328. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Alicia M Harrington
Examiner
Art Unit 2873

AMH

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